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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,774	11/13/2001	Markus Doetsch	L&L-10197	4722
24131	7590	03/08/2006	EXAMINER	
LERNER GREENBERG STEMER LLP			LUGO, DAVID B	
P O BOX 2480			ART UNIT	
HOLLYWOOD, FL 33022-2480			PAPER NUMBER	
			2637	

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/008,774	Applicant(s) DOETSCH ET AL.	
	Examiner David B. Lugo	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 6-10, 13, 15 and 19-25 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6, 7, 9, 10, 13, 15, 19-21 and 23-25 is/are rejected.
- 7) ☒ Claim(s) 8 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/14/05 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 6-10, 13 and 15 have been considered but are moot in view of the new ground(s) of rejection.

3. The indicated allowability of claims 19-25 is withdrawn in view of the newly discovered reference(s) to Shizawa U.S. Patent 5,311,457. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 6, 7, 9, 10, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatsuta et al. (previously cited) in view of Shizawa U.S. Patent 5,311,457.

Regarding claims 1 and 15, Tatsuta et al. disclose a mobile communications receiver comprising a signal receiving circuit as shown in Figure 1, which obtains signals $i(t)$ and $q(t)$ (i.e.

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K=2 reception signals) by performing quadrature phase detection on a received modulated signal (col. 1, lines 28-33), the receiver further including a pre-processing circuit as shown in Fig. 1 having K A/D converters (21, 22) connected in parallel for sampling the K reception signals independently for providing K digital signals and digital filter devices 31, 32 for filtering the digital signals.

Tatsuta et al. do not expressly show in Figure 1 that the pre-processing circuit comprises a multiplexer and that the filter device comprises shift registers of length K. Shizawa discloses a digital filter device in Figure 1 comprising a multiplexer 22 (col. 11, lines 23-28), and a plurality of memory elements 24_1-24_{r-1} , each memory element formed by a shift register of length $K=2$ ($D_{11}-D_{21}$) (col. 11, lines 28-32) corresponding to the number of inputs supplied to the multiplexer 22. It would have been obvious to one of ordinary skill in the art to use a digital filter as taught by Shizawa in the receiver of Tatsuta et al. because it uses only a single digital filter in a time sharing manner which achieves a significant reduction in the number of elements and cost therewith (see Shizawa, col. 20, lines 24-34).

Regarding claims 6 and 7, Tatsuta et al. in combination with Shizawa disclose a receiver as disclosed above, where the filter has a degree of r (see Shizawa Fig. 1), but do not disclose that the degree is between 5 and 20, and in particular between 10 and 18. However, the degree of a digital filter is selected based on design choice. Therefore, it would have been obvious to one of ordinary skill in the art to select a degree of the filter between 10 and 18 as a matter of design choice.

Regarding claims 9 and 10, Tatsuta et al. disclose that the K reception signals are generated by splitting the reception signal into an in-phase reception signal and a quadrature

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reception signal (col. 1, lines 28-33, col. 9, lines 45-48), and are thus considered to be received by a single reception sensor.

Regarding claim 19, Tatsuta et al. disclose a mobile communications receiver comprising a signal receiving circuit as shown in Figure 1, which obtains signals $i(t)$ and $q(t)$ (i.e. $K=2$ reception signals) by performing quadrature phase detection on a received modulated signal (col. 1, lines 28-33), the receiver further including a pre-processing circuit as shown in Fig. 1 having K A/D converters (21, 22) connected in parallel for sampling the K reception signals independently for providing K digital signals and digital filter devices 31, 32 for filtering the digital signals.

Tatsuta et al. do not expressly show in Figure 1 that the pre-processing circuit comprises a stage containing K digital zero-inserting elements that are connected in parallel, each of the zero-inserting elements being fed with a respective one of the K digital signals and, and that the filter device comprises shift registers of length K .

Shizawa discloses a digital filter device in Figure 5 comprising a K zero-inserting elements (50_1-50_n) corresponding to the number of supplied reception signals for inserting $K-1$ zeros per sampling value of the respective digital signal (col. 13, lines 18-22), and a plurality of memory elements 24_1-24_{r-1} , each memory element formed by a shift register of length K ($D_{11}-D_{n1}$) (col. 13, lines 34-39) corresponding to the number of inputs supplied to the zero-inserting elements. It would have been obvious to one of ordinary skill in the art to use a digital filter as taught by Shizawa in the receiver of Tatsuta et al. because it uses only a single digital filter in a time sharing manner which achieves a significant reduction in the number of elements and cost therewith (see Shizawa, col. 20, lines 24-34).

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Regarding claims 20 and 21, Tatsuta et al. in combination with Shizawa disclose a receiver as disclosed above, where the filter has a degree of r (see Shizawa Fig. 1), but do not disclose that the degree is between 5 and 20, and in particular between 10 and 18. However, the degree of a digital filter is selected based on design choice. Therefore, it would have been obvious to one of ordinary skill in the art to select a degree of the filter between 10 and 18 as a matter of design choice.

Regarding claims 23 and 24, Tatsuta et al. disclose that the K reception signals are generated by splitting the reception signal into an in-phase reception signal and a quadrature reception signal (col. 1, lines 28-33, col. 9, lines 45-48), and are thus considered to be received by a single reception sensor.

6. Claims 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tatsuta et al. in view of Shizawa as applied to claims 1 and 19 above, and further in view of Liang et al. U.S. Patent 6,314,147 (previously cited).

Regarding claims 13 and 25, Tatsuta et al. in combination with Shizawa disclose a receiver as disclosed above, but do not disclose that the receiver includes a plurality of receptor sensors, each having a directional reception characteristic for sensing radio signals in a predefined spatial segment.

Liang et al. disclose an antenna array comprising a plurality of spatially-separated receiving antennas. It would have been obvious to one of ordinary skill in the art to use a plurality of spatially-separated receiving antennas as disclosed by Liang et al. in the receiver of Tatsuta et al. in combination with Shizawa for diversity reception.

Allowable Subject Matter

7. Claims 8 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Lugo
3/6/06


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER